sam.bredeson@gmail.com
218-202-0074

Samuel Bredeson

8 Superior St. #1
Oak Park, IL 60302

As a graduate student, the focus of my research has been developing nerve interface devices. I have worked with a team of engineers and scientists from multiple institutions in the development of a wireless peripheral nerve interface platform based on electrode arrays designed for cortical stimulation. The device platform is designed to be easily modified for recording or stimulation purposes and for nerves of varying size. My team has implanted devices of this type into rodent models, illiciting motor responses consistently over a 14-month period. I have lead a study to investigate the relationship between the size of this type of peripheral nerve interface device and damage done to its target nerve.

The nerve interface devices that I have worked on utilize floating microwire electrode arrays, inductive-link wireless telemetry, and non-hermetic silicone encapsulation. While these devices have been tested in-vivo in rodent models, they have been designed with human clinical use in mind. Potential applications for these technologies include prosthesis control, sensory feedback, and bioelectronic medicine delivery. Nerve interface devices of this type have the potential to greatly impact the medical field.

In addition, I designed a surgical insertion instrument for wireless cortical neural stimulator devices and was involved in the first implantations of those devices in human cadaver tissue and living primates. This instrument is currently being finalized for use in an upcoming human trial.

The last century of rapid technological advancement has created a world of new opportunities to use technology and devices to treat medical conditions. After using insulin pumps and glucose meters for over twenty years, I have personally seen the incredible improvements medical devices can have on a person's quality of life. I have also seen the frustrations that can be caused by devices that fail or are designed poorly. These experiences have led me to develop an interest in creating medical devices that can solve problems in new ways. Having been a medical device user myself, I have passion and insight for designing devices that are sensitive to the needs of the patient. Even when working on research projects in a laboratory, I focus on making devices that can be easily translated to clinical use.

Working with physiologists, veterinarians, neurosurgeons, materials scientists, and other biomedical engineers at various institutions while in school has been a great opportunity and has strengthened my ability to approach design problems from multiple points of view. I am eager to bring my skills, experience, and passion to a career in the development of medical devices.

Sincerely,